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| Module | Lessons | Vocab and Tools | Standards |
| Concepts of Congruence and Similarity (Module 2&3)  Concepts of Congruence and Similarity (Module 2&3) | Exploratory Activity  *Lessons 1-10 from Module 2*  1: Why move things around?  2: Definition of Translation and Three Basic Properties  4: Definition of Reflection and Basic Properties  6: Rotations of 180 degrees  7: Sequencing Translations  8: Sequencing Reflections and Translations  10: Sequences of Rigid Motions  *Lesson 1-6 from Module 3*  1: What Lies Behind “Same Shape”?  3: Examples of Dilations  4: Fundamental Theorem of Similarity (FTS)  5: First Consequences of FTS  6: Dilations on the Coordinate Plane  8: Similarity  9: Basic Properties of Similarity  11: More About Similar Triangles  **Assessment A**  *Lessons 12-16 from Module 2*  12: Angles Associated with Parallel Lines  13: Angle Sum of a Triangle  14: More on the Angles of a Triangle  15: Informal Proof of the Pythagorean Theorem  16: Applications of the Pythagorean Theorem  *Lessons 13-14 from Module 3*  13: Proof of the Pythagorean Theorem  14: The Converse of the Pythagorean Theorem  **Assessment B** | New or Recently Introduced Terms  **Transformation** (A *transformation* is a rule, to be denoted by , that assigns each point of the plane a unique point which is denoted by .)  **Basic Rigid Motion** (A *basic rigid motion* is a rotation, reflection, or translation of the plane.  Basic rigid motions are examples of transformations. Given a transformation, the image of a point is the point the transformation maps the point to in the plane.)  **Translation** (A *translation* is a basic rigid motion that moves a figure along a given vector.)  **Rotation** (A *rotation* is a basic rigid motion that moves a figure around a point, degrees.)  **Reflection** (A *reflection* is a basic rigid motion that moves a figure across a line.)  **Image of a point, image of a figure** (*Image* refers to the location of a point or figure after it has been transformed.)  **Sequence (Composition) of Transformations** (A *sequence of transformations* is more than one transformation. Given transformations and , is called the composition of and .)  **Dilation** (*Dilation*, , is a transformation of the plane with center and scale factor (). If and if , then the point , to be denoted by , is the point on the ray so that . If the scale factor , then a dilation in the coordinate plane is a transformation that shrinks or magnifies a figure by multiplying each coordinate of the figure by the scale factor.)  **Congruence** (A finite composition of basic rigid motions—reflections, rotations, translations—of the plane. Two figures in a plane are *congruent* if there is a congruence that maps one figure onto the other figure.)  **Similar** (Two figures in the plane are *similar* if there exists a similarity transformation taking one figure to the other.)  **Similarity Transformation** (A *similarity transformation*,or *similarity*,is a composition of a finite number of basic rigid motions or dilations. The scale factorof a similarity transformation is the product of the scale factors of the dilations in the composition; if there are no dilations in the composition, the scale factor is defined to be .)  **Similarity** (A *similarity* is an example of a transformation.)  **Vector** (A Euclidean *vector* (or directed segment) is the line segment together with a direction given by connecting an initial point to a terminal point .)  **Transversal** (Given a pair of lines and in a plane, a third line is a *transversal* if it intersects at a single point and intersects at a single but different point.)  Familiar Terms and Symbols[[1]](#footnote-1)  Ray, line, line segment, angle  Parallel and perpendicular lines  Supplementary, complementary, vertical, and adjacent angles  Triangle, quadrilateral  Area and perimeter  Scale Drawing  Angle-Preserving  **Suggested Tools and Representations**  Transparency or patty paper  Wet or dry erase markers for use with transparency  Optional: geometry software  Composition of Rigid Motions: <http://youtu.be/O2XPy3ZLU7Y>  ASA: <http://www.youtube.com/watch?v=-yIZdenw5U4>  Video that demonstrates Pythagorean Theorem proof using similar triangles: <http://www.youtube.com/watch?v=QCyvxYLFSfU> | 8.G.A.1 Verify experimentally the properties of rotations, reflections, and translations:   1. Lines are taken to lines, and line segments to line segments of the same length. 2. Angles are taken to angles of the same measure. 3. Parallel lines are taken to parallel lines.   8.G.A.2 Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.  8.G.A.3 Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.  8.G.A.4 Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.  8.G.A.5 Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. *For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so.*  8.G.B.6 Explain a proof of the Pythagorean Theorem and its converse.  8.G.B.7 Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions. |

1. These are terms and symbols students have seen previously. [↑](#footnote-ref-1)